

## United States Military Weapons of War Part 1: Weapons and Equipment of the Infantry and Special Ops

There is no argument that the United States Military is the most powerful military in the World. We have achieved a level of technology in military weapons and equipment that no other nation on earth comes close to.

So, what weapons and equipment is available to our military service members in times of war and conflict? This series will describe some of the main weapons and equipment items used by our members. It would take a very large book to thoroughly discuss all of the weapons and equipment used by the United States Military today, and I won't even try. This series will try to cover the highlights, starting with some of the main weapons and equipment used by the Infantry and Special Operations Units. In future parts of this series, I'll cover military vehicles, including tanks and armor, missiles and artillery, military aircraft, and military ships and submarines.

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### Small Arms

The basics of basics are the small arms weapons used by the individual infantryman. Here are the basic small arms used by the United States Army:



**M16A2 Rifle.** The M16A2 is the standard issue rifle. It's carried by pretty much every soldier in a combat zone. Most people simply call it the M-16. The M-16 has been around in one version or another since the Vietnam war (the first version, the M16A1 entered Army service in 1964). It's longevity is creditable to its usefulness as a general assault weapon. It's quite simply one of the finest military rifles ever made (although advocates of the M-4 Carbine may argue with me). The rifle is lightweight, simple to operate, and puts out a lot of lead.

The M16A2 5.56mm rifle is a lightweight, air-cooled, gas-operated, magazine-fed, shoulder or hip-fired weapon designed for either automatic fire (3-round bursts) or semiautomatic fire (single shot) through the use of a selector lever. The weapon has a fully adjustable rear sight. The bottom of the trigger guard opens to provide access to the trigger while wearing winter mittens. The upper receiver/barrel assembly has a fully adjustable rear sight and a compensator which helps keep the muzzle down during firing. The steel bolt group and barrel extension are designed with locking lugs which lock the bolt group to the barrel extension allowing the rifle to have a lightweight aluminum receiver.

Primary function: Infantry weapon

Manufacturer: Colt Manufacturing and Fabrique Nationale Manufacturing Inc.

Length: 39.63 inches (100.66 centimeters)

Weight, with 30 round magazine: 8.79 pounds (3.99 kilograms)

Bore diameter: 5.56mm (.233 inches)

Maximum effective range:

Area target: 2,624.8 feet (800 meters)  
Point target: 1,804.5 feet (550 meters)  
Muzzle velocity: 2,800 feet (853 meters) per second  
Rate of fire:  
Cyclic: 800 rounds per minute  
Sustained: 12-15 rounds per minute  
Semiautomatic: 45 rounds per minute  
Burst: 90 rounds per minute  
Magazine capacity: 30 rounds  
Unit Replacement Cost: \$586

### **M-4 Carbine**

The M-4 combat assault rifle first entered Army service in 1997. The rifle is the standard weapon used by some Army units such as the 82nd Airborne Division and special operations units, such as Army Rangers.

With a shortened barrel and collapsible stock, the M-4 is ideal for close quarter marksmanship where light weight and quick action are required. Firing a standard 5.56 millimeter round, the weapon weighs a mere 5.6 lbs. (empty). A revised rear sight allows for better control of the weapon out to the maximum range of the ammunition used. With the PAQ-4 (Infrared Sight) mounted on the forward rail system, the M-4 can be fitted for increased firepower.



The M-4 Carbine can also be fitted with the M-203 40mm grenade launcher. The M-203 is a lightweight, compact, breech loading, pump action, single shot launcher. The launcher consists of a hand guard and sight assembly with an adjustable metallic folding, short-range blade sight assembly, and an aluminum receiver assembly which houses the barrel latch, barrel stop and firing mechanism. The launcher is capable of firing a variety of low velocity 40mm ammunition. The launcher also has a quadrant sight that may be attached to the M-4 carrying handle and is used when precision is required out to the maximum effective range of the weapon. The M-4 in this photograph also has an M-68 close-quarters battle sight mounted on the rear rail and a PAQ-4 infra-red sight on the forward rail.

Type: Compact assault rifle  
Entered Army Service: 1997  
Specifications:  
Caliber: 5.56mm  
Weight: 5.65 lbs  
Range: 500 m  
Rate of fire: variable, depending on rate selected

### **M-24 Sniper Weapon**



The M24 Sniper's Weapon System (SWS) represents a return to bolt action sniper rifles by the US Army. The rifle entered Army service in

1998. The M24 uses the Remington 700 action, although the receiver has been made for adaptation to take the .300 Winchester Magnum round. The stock (HS Precision) is made of a composite of Kevlar, graphite and fiberglass bound together with epoxy resins, and features aluminum bedding block and adjustable butt plate. A detachable bipod (Harris) can be attached to the stock's fore-end.

The rifle is a bolt-action, six-shot repeating rifle (one round in the chamber and five rounds in the magazine). It is used with either the M3A telescope (day optic sight, usually called the M3A scope, a 10X fixed Leupold M3 Ultra telescope) or the metallic iron sight. This is the sniper weapon used by the Army.

Caliber: 7.62x51mm NATO (.308 win)

Operation: Bolt Action

Feed: 5-Round internal magazine

Weight: 12.1 lb (5.49 kg) empty without telescope

Length: 43in (1092mm)

Sights: 10x42 Leupold Ultra M3A telescope sight (Mil-Dots), plus detachable emergency iron sights. (Redfield Palma International)

Barrel: 24" length, 1 twist in 11.2", 5 lands & grooves.

Stock: HS Precision - adjustable length.

Max Effective Range: 800 meters (875 yards)

Expected Accuracy: 1 MOA with M118 (Ammo is limiting factor)

### **M40A1 Sniper Rifle**

This is the preferred sniper rifle for the U.S. Marine Corps. The M40A1 sniper rifle is based on the Remington model 700. It is a heavy barrel, bolt action, magazine fed 7.62mm rifle that is optimized for accuracy with Match Grade ammunition. The rifle is equipped with a special 10 power Unertl sniper scope. With scope, the rifle weighs approximately 14.5 pounds. It is equipped with a built-in five round magazine.



The unique characteristics of the M40A1 Sniper Rifle are: commercial competition-grade heavy barrel, McMillan fiberglass stock and butt pad, modified Winchester Model 70 floor plate and trigger guard, and modified and lightened trigger. In addition, each stock is epoxy bedded for accuracy and all weapons must shoot less than one minute of angle (MOA).

The M40A1 was put into service in the 1970s to meet the need of a long range sniper rifle. Each rifle is hand built by specially trained and qualified personnel at the Marine Corps Marksmanship Training Unit (MTU) at Quantico, Virginia.

Length: 44 inches (111.76 centimeters)

Barrel length: 24 inches (61 centimeters)

Weight: 14.5 pounds (6.58 kilograms)

Bore diameter: 7.62mm (.308 inches)

Maximum effective range: 1000 yards (914 meters)

Muzzle velocity: 2550 feet (777 meters) per second

Chamber pressure: 50,000 psi

Magazine capacity: 5 rounds

Unit Replacement Cost: \$2,105

## M-249 SAW



The M-249 is unofficially called the Minimi. The official name for the weapon is SAW which means Squad Automatic Weapon. Early test versions of the M-249 were plagued with problems, but the current model is considered reliable. The weapon entered Army service in 1987, replacing the M-60 Machine Gun.

The M-249 is a .223 cal (5.56mm) gas operated light weight machine gun which feeds from a belt held in a 100 or 200 rounds box under the gun. This weapon has a plastic pistol grip and a folding stock so it can be kept compact and light.

The M-249 machine gun is an ideal complementary weapon system for the infantry squad platoon. It is light enough to be carried and operated by one man, and can be fired from the hip in an assault, even when loaded with a 200-round ammunition box. The barrel change facility ensures that it can continue to fire for long periods. The US Army has conducted strenuous trials on the M249, showing that this weapon has a reliability factor that is well above that of most other small arms weapon systems. The weapon is used by the U.S. Army and the U.S. Marine Corps.

Type: Squad automatic weapon

Entered service: 1987

Specifications:

Caliber: 5.56mm

Length: 100 cm

Weight: 16.3 lbs

Range: 800 meters

Rate of fire: 750 rounds per minute

## M-240 Machine Gun

The M-240 entered Army and Marine Corps service in 1997. The M-240 is a version of FN's MAG 58 general-purpose machine gun. The M-240 fires the 7.62mm NATO round and is very reliable, with an estimated 26,000 Mean Rounds Between Failure (MRBF).



Advantages of this weapon include its popularity with other nation's forces and number of configurations. For example, in a helicopter crash, the M-240d helicopter-mount version could be quickly modified by installing the bipod and butt stock of the M-240b version, which would then allow the weapon to be used for self defense by the surviving helicopter crew members.

The M-240 is manufactured in the following configurations: M-240b is designed for infantry use. The "B" version weapon is equipped with a thermal shield over the rear of the barrel to protect the operator. The M-240c version is designed for use internally in M2/M3 Bradley Infantry Fighting Vehicle. The M-240d is designed for use on pintel mounts in helicopters and on the outside of tanks and armored vehicles. The M-240g version is used by special operations forces. The heat shield on this version is removed and there are special fittings for night sights.

Type: Medium machine gun  
Entered service: 1997  
Specifications:  
Caliber: 7.62mm  
Weight: 27.6 lbs  
Range: 1,100 m  
Rate of fire: 600-9 rounds per minute

## **M-2 Machine Gun**

The Browning M2 .50 Caliber Machine Gun, Heavy barrel is an automatic, recoil operated, air-cooled machine gun with adjustable headspace and is crew transportable with limited amounts of ammunition over short distances. By repositioning some of the component parts, ammunition may be fed from either the left or right side. A disintegrating metallic link-belt is used to feed the ammunition into the weapon.



This gun is has a back plate with spade grips, trigger, and bolt latch release. This gun may be mounted on ground mounts and most vehicles as an anti-personnel and anti-aircraft weapon. The gun is equipped with leaf-type rear sight, flash suppressor and a spare barrel assembly. Associated components are the M63 antiaircraft mount and the M3 tripod mount.

The M-2 is used by all of the United States Military Services.

Builder: Saco Defense  
Length: 61.42 inches (156 centimeters)  
Weight:  
Gun: 84 pounds (38 kilograms)  
M3 Tripod (Complete): 44 pounds (19.98 kilograms)  
Total: 128 pounds (58 kilograms)  
Bore diameter: .50 inches (12.7mm)  
Maximum effective range: 2000 meters with tripod mount  
Maximum range: 4.22 miles (6.8 kilometers)  
Cyclic rate of fire: 550 rounds per minute  
Unit Replacement Cost: \$14,002

## **M-9 Handgun**

Did you know that in combat, it's mostly officers who carry handguns? Most enlisted don't. Notable exceptions are military police, and special operations forces. The M-9 pistol is the primary sidearm for all of the military services. It entered the services in 1985 (1990 for the Army), pushing out the older M-1911A1 .45-caliber pistol, a weapon with an 80-year military history, and 4-inch-barrel, .38-caliber revolvers. The adoption of the M-9 pistol was the result of a congressional mandate to equip all U.S. services with a standard handgun.



The Colt-designed M-1911A1 served soldiers well in many wars; some older soldiers argued, why replace it? As with other Army weapons, competition proved the M-9 to be the best sidearm.

To get the nod, the M-9 had to meet strict requirements for functional reliability, speed of first shot, rapidity of fire, speed of reloading, range, penetration and accuracy to 50 yards. Also, the pistol's components had to be interchangeable, so a working weapon could be pieced together from the parts of others.

The M-9 went through a series of rugged tests to evaluate its functionality. An extreme climatic test checked its ability to withstand temperatures between minus 40 and 140 degrees. A 10-day salt water immersion and humidity trial tested its resistance to corrosion. It tackled mud, sand, dirt and water to test its operation under adverse field conditions. A fully loaded weapon was dropped four feet onto a hard surface to test for accidental discharge.

To test the ability to swap pistol components, testers fired and then disassembled 10 weapons. The parts were randomly put back together, then the weapons were fired again with no problems. If needed, the parts of weapons can be cannibalized to create a working pistol from broken ones.

Type: Semiautomatic pistol  
Entered Army service: 1990  
Specifications:  
Caliber: 9mm  
Length: 217mm  
Barrel length: 125mm  
Weight: 850 g  
Magazine capacity: 15 rounds  
Range: 50 m

### **M-1014 Joint Service Combat Shotgun**

The Joint Service Combat Shotgun is a compact, lightweight, semi-automatic, 12 gauge weapon configured with a standard magazine with a minimum capacity of six 2 3/4 inch cartridges. The Combat Shotgun is capable of firing 12 gauge 3.0 inch magnum ammunition and is interoperable with standard 2 3/4 inch ammunition without adjustment to the operating system.



The M-1014 is constructed of lightweight polymer materials and corrosion resistant metal components. To enhance mission performance and provide increased operator flexibility, the M-1014 is equipped with modular components such as modular stocks in various configurations and modular barrels of various lengths.

The Marine Corps was the lead agency in the test and evaluation of this shotgun. It is designed to replace the many different shotguns used in all of the military service. The shotgun was officially accepted for production in 2001. The weapon is primarily used by security forces and by special operations forces.

Caliber: 12 gauge, accepts 23/4" and 3" standard and magnum loads.  
Length: 39.8" w/stock extended, 34.9" collapsed.  
Weight: 8.44 lbs. empty.  
Safety: Ambidextrous manual cross bolt.  
Magazine Capacity: Six 3" shells seven 23/4", plus one chambered round can be unloaded without cycling through the action.  
Trigger Pull: 5.5 to 7.28 lbs.  
Buttstock: Modular telescopic with removable pistol grip.  
Sights: Adjustable aperture rear and fixed post front, radius 23.7"  
Maximum Effective Range: 40 yards with 00 buckshot and in excess of 100 yards with the rifled slug.

### **MP-5 Sub-Machine Gun**



The MP5-N fires from a closed and locked bolt in either the automatic or semiautomatic modes. This gun is recoil operated and has a unique delayed roller locked bolt system, a retractable butt stock, a removable suppressor, and illuminating flashlight integral to the forward hand guard. The flashlight is operated by a pressure switch custom fitted to the pistol grip. This is the same basic weapon used by the FBI's Hostage Rescue Team and other world-class counter-terrorist

organizations.

The present inventory includes both suppressed and non-suppressed versions of the MP5. The basic configuration of this weapon makes for an ideal size, weight, and capable (accuracy, lethality, reliability, etc.) close quarters battle weapon system.

This weapon is manufactured by Heckler and Koch and is presently fielded to Marine Corps Force Reconnaissance Companies and Marine Security Force Battalions, and Special Operations Units, such as Army Rangers, Delta Force, and Navy SEALs.. It is currently considered the main weapon in the close quarters battle (CQB) environment.

Length:

Collapsed stock: 19.29 inches (49 centimeters)

Extended stock: 25.98 inches (66 centimeters)

Weight: 7.44 pounds (3.38 kilograms) (w/30 round magazine)

Bore diameter: 9mm (.355 inches)

Maximum effective range: 328.1 feet (100 meters)

Rate of fire: 800 rounds per minute

Unit Replacement Cost: \$894

### **Hand Grenades**

Hand grenades are nothing more than small bombs, containing explosives or chemicals, that can be thrown by hand or rigged as booby traps. Their origin has been traced back many centuries, and it is generally agreed that the Chinese, whom we credit with the invention of gunpowder, were first to use them. However, it was not until World War I that they were sufficiently developed to be effective and safe. By World War II, the grenade inventory expanded to include



smoke grenades for signaling and screening, phosphorus and fragmentation grenades to produce casualties, and gas grenades for both casualty and riot control effects. The grenades being used today are in many respects representative of the entire history of the development of grenades.

There are several varieties of hand grenades designed for many purposes. All of these grenades can be broadly classified into six general types: fragmentation, illumination, chemical, incendiary, smoke, and practice and training grenades.

The M67 fragmentation grenade is the standard grenade used by the U.S. Military. It has a smooth, sheet-metal body and is shaped like a ball. Its outer case is lined on the inside with a serrated wire recoil. It is filled with 6.5 ounces of an explosive, known as Composition B, and uses a detonating type of fuze. When the detonator causes Composition B to explode, fragments of the body and fuze assembly are hurled in all directions. The M67 weighs 14 ounces and the average man can throw it 40 meters. The effective casualty-producing radius is 15 meters.

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## **Small Missiles and Mortars**

Sometimes you just need a bigger gun. There are times when infantry units need a little more firepower in the way of lightweight mortars or ground-to-air missiles to get rid of those bothersome enemy aircraft or tanks, or to punch through fortified buildings. Here are the main small ground-to-air missile systems and light mortars that are used by our "ground-pounders."

### **FIM-9 Stinger Missile**



The Stinger weapon system is a man portable (34.5 pounds), shoulder-fired, supersonic missile system designed to counter high speed, low-level, ground attack aircraft. The Stinger is effective against helicopters, unmanned aerial vehicles, and observation and transport aircraft. Once fired, the Stinger uses proportional navigation algorithms to guide the missile to a predicted intercept point. The Stinger missile can be used as a man portable air defense system (MANPAD) when the weapon is fired from the gunner's shoulder, mounted aboard the Avenger weapons system, or mounted in the light armored vehicle-air defense variant (LAV-AD).

The Stinger is a true "fire and forget" missile, requiring no inputs from the gunner once the weapon is fired. This allows the gunner to take cover, move to an alternate position, or



engage additional targets. The Stinger also possesses an integral identification, friend or foe (IFF) subsystem to assist the gunner in identifying friendly aircraft.

The launch motor ejects the missile from the launch tube. The missile coasts a safe distance (about 9 meters) from the gunner before the dual thrust flight motor ignites and provides a sustained 22 gravity acceleration that arms the missile. After the gunner arms the missile, a sustained flight phase maintains missile velocity until the propellant is consumed. Then the missile enters a free flight period in which the motor has burned out, but the missile maintains a degree of maneuverability prior to interception or self destruction.

The warhead consists of a fuze assembly and the equivalent of one pound of high explosives encased in a pyrophoric titanium cylinder. The fuze is extremely safe and makes the missile exempt from any hazards of electromagnetic radiation to ordnance conditions. The warhead can be detonated by penetrating the target, impacting the target, or self-destruction. Self-destruction occurs 15 to 19 seconds after launch.

Type: Short range air-defense missile  
Entered Army service: 1981  
Propulsion: Dual thrust solid fuel rocket motor  
Length: 5 feet (1.5 meters)  
Width: 5.5 inches (13.96 centimeters)  
Weight: 12.5 pounds (5.68 kilograms)  
Weight fully armed: 34.5 pounds (15.66 kg)  
Range: 1 to 8 kilometers  
Ceiling 10,000 feet (3.046 kilometers)  
Speed: Supersonic in flight  
Crew: 2 enlisted  
Guidance system: Fire-and-forget passive infrared seeker  
Warheads: High explosive  
Rate of fire: 1 missile every 3 to 7 seconds  
Sensors: Passive infrared  
Unit Replacement Cost \$38,000  
Inventory: About 13,400 missiles available in the Army and Marine Corps

## **M-252 Mortar**

The M252 81mm Medium Extended Range Mortar is a crew-served, medium weight mortar which is highly accurate and provides for a greater range (4,500 meters to 5,650 meters) and lethality than the previous 81mm mortar. The cannon has a crew-removable breech plug and firing pin. The muzzle end has a short tapered lead-in which acts as a blast attenuator device. The breech end is finned for better cooling. This mortar also uses the standard M64 mortar sight of the M-224 60mm mortar.



The M252 is an adaptation of the standard British 81mm mortar developed in the 1970s. It is mostly commonly found in the mortar platoon of an Army or Marine Corps infantry battalion.

The M252 is ideally suited to support airborne, air assault, mountain and light infantry units. The M-252 Mortar is used by the U.S. Army and the U.S. Marine Corps.

Type: 81mm mortar  
Entered service: 1987  
Caliber: 81mm  
Barrel length: 4 ft 6 in  
Weight: 91 lbs  
Range: 5,600 meters  
Rate of fire: 15 rounds/min sustained

### **M-224 Lightweight Mortar**



The M224 60mm Lightweight Mortar is a smooth bore, muzzle loading, high-angle-of-fire weapon. The cannon assembly is composed of the barrel, combination base cap, and firing mechanism. The mount consists of a bipod and a base plate which is provided with screw type elevating and traversing mechanisms to elevate/traverse the mortar. The M64 sight unit is attached to the bipod mount via a standard dovetail. An additional short range sight is attached to the base of the cannon tube for firing the mortar on the move and during assaults. It has a spring-type shock absorber to absorb the shock of recoil in firing.

The M224 replaced the older (WWII era) M2 and M19, 60mm Mortars. These weapons only possessed 2,200 yards of effective range. The M224 was designed to fire all types of the older ammunition, but its primary rounds are of the newer, longer-range type. The weapon is used primarily by the U.S. Marine Corps.

Length: 40 inches (101.6 centimeters)  
Weight: 46.5 pounds (21.11 kilograms)  
Bore diameter: 60mm  
Maximum effective range: 2.17 miles (3490 meters)  
Rates of fire:  
Maximum: 30 rounds/minute  
Sustained: 20 rounds/minute  
Unit Replacement Cost: \$10,658

### **AT4 Anti-Armor Weapon**

The M136 AT4 is the Army and Marine Corps's primary light anti-tank weapon. The M136 AT4 is a recoilless rifle used primarily by Infantry Forces for engagement and defeat of light armor. The recoilless rifle design permits accurate delivery of an 84mm High Explosive Anti-Armor warhead, with negligible recoil.

The M136 AT4 is a lightweight, self-contained, anti armor weapon consisting of a free-flight, fin-stabilized, rocket-type cartridge packed in an expendable, one-piece, fiberglass-wrapped tube. The M136 AT4 is man-portable and is fired from the right shoulder only. The



launcher is watertight for ease of transportation and storage.

Though the M136 AT4 can be employed in limited visibility, the firer must be able to see and identify the target and estimate the range to it. Subsequent to the initial fielding of the weapon, a reusable night sight bracket was developed and fielded. It permits utilization of standard night vision equipment. The system's tactical engagement range is 250 meters and has been used in multiple combat situations. The round of ammunition is self-contained in a disposable launch tube. The system weighs 15 pounds and can be utilized effectively with minimal training.

Primary function: Light anti-armor weapon  
Manufacturer: FFV Ordnance, Sweden and Alliant Techsystems  
Length: 40 inches (101.6 centimeters)  
Weight: 14.75 pounds (6.7 kilograms)  
Bore diameter: 84mm  
Maximum effective range: 984.3 feet (300 meters)  
Penetration: 400 mm of rolled homogenous armor  
Time of Flight (to 250 meters): less than 1 second  
Muzzle velocity: 950 feet (285 meters) per second  
Operating temperature: -104 to +140° F (-40 to +60° C)  
Ammunition: Rocket with shaped charge warhead  
Unit Replacement Cost: \$1,480.64

### **Multi-Purpose Assault Weapon**



The Shoulder-Launched Multi-Purpose Assault Weapon (SMAW) is designed to destroy bunkers and other fortifications during assault operations as well as other designated targets with the dual mode rocket and to destroy main battle tanks with the HEAA rocket.

The SMAW is an 83mm man-portable weapon system consisting of the MK153 Mod 0 launcher, the MK 3 Mod 0 encased HEDP rocket, the MK 6 Mod 0 encased HEAA rocket, and the MK217 Mod 0 spotting rifle cartridge. The launcher consists of a fiberglass launch tube, a 9mm spotting rifle, an electro-mechanical firing mechanism, open battle sights, and a mount for the MK42 Mod 0 optical and AN/PVS-4 night sights. The High Explosive, Dual Purpose (HEDP) rocket is effective against bunkers, masonry and concrete walls, and light armor. The High Explosive Anti-Armor (HEAA) rocket is effective against current tanks without additional armor. The 9mm spotting rounds are ballistically matched to the rockets and increase the gunner's first round hit probability. Training is accomplished with the MK7 Mod 0 encased common practice rocket and the MK213 Mod 0 noise cartridge.

The SMAW MK153 Mod 0 launcher is based on the Israeli B-300 and consists of the launch tube, the spotting rifle, the firing mechanism, and mounting brackets. The launch tube is fiberglass/epoxy with a gel coat on the bore. The spotting rifle is a British design and is mounted on the right side of the launch tube. The firing mechanism mechanically fires the spotting rifle and uses a magneto to fire the rocket. The mounting brackets connect the components and provide the means for boresighting the weapon. The encased rockets are loaded at the rear of the launcher. The spotting cartridges are stored in a magazine in the cap of the encased rocket.

Originally developed as a unique weapon for the U.S. Marine Corps, during Desert Storm, 150 launchers and 5,000 rockets were provided to the U.S. Army. The Army subsequently added the weapon to its inventory.

Primary function: Portable anti-armor rocket launcher.

Length:

To Carry: 29.9 inches (75.95 centimeters)

Ready-to-Fire: 54 inches (137.16 cm)

Weight:

To Carry: 16.6 pounds (7.54 kg)

Ready-to-Fire (HEDP): 29.5 pounds (13.39 kg)

Ready-to-Fire (HEAA): 30.5 pounds (13.85 kg)

Bore diameter: 83mm

Maximum effective range:

1 x 2 Meter Target: 250 meters

Tank-Sized Target: 500 meters

Introduction date: 1984

Unit Replacement Cost: \$13,000

## Dragon Weapon System

The Dragon Weapon System is designed to engage and destroy armor and light armored vehicles. The weapon is also effective against hard targets such as bunkers and field fortifications.

The warhead power of Dragon makes it possible for a single Marine or soldier to defeat armored vehicles, fortified bunkers, concrete gun emplacements, or other hard targets. The launcher consists of a smoothbore fiberglass tube, breech/gas generator, tracker and support, bipod, battery, sling, and forward and aft shock absorbers. Non-integral day and night sights are required to utilize the Dragon.



The complete system consists of the launcher, the tracker and the missile, which is installed in the launcher during final assembly and received by the military in a ready to fire condition. The launch tube serves as the storage and carrying case for the missile. The night tracker operates in the thermal energy range.

The first-generation Dragon, a 1000-meter system requiring 11.2 seconds flight-to-target time, was developed for the US Army and fielded in 1970. A product improvement program (PIP) was initiated by the Marine Corps in 1985 and managed by NSWC Dahlgren. The PIP, designated Dragon II, was designed to increase warhead penetration effectiveness by 85%. The Dragon II missile is actually a retrofit of warheads to the first generation missiles already in the Marine Corps and Army inventory.

## TOW Missile System



The tube-launched, optically-tracked, wire-guided (TOW) missile is a crew-portable, vehicle-mounted, heavy anti armor weapon system consisting of a launcher and one of five versions of the TOW missile. It is designed to defeat armored

vehicles and other targets such as field fortifications from ranges up to 3,750 meters. After firing the missile, the gunner must keep the crosshairs of the sight centered on the target to ensure a hit. The system will operate in all weather conditions in which the gunner can see a target throughout the missile flight by using either a day or night sight.

The TOW system is used on the high mobility multipurpose wheeled vehicle (HMMWV), the M151 jeep, the armored personnel carrier, the Bradley Fighting Vehicle (BFV), COBRA helicopters, the Improved Tow Vehicle (ITV), and the USMC light armored vehicle. Three of the five TOW missile versions—Basic TOW, Improved TOW, and TOW 2—are no longer being produced for U.S. forces. However, these versions are used by 43 allied countries, and Switzerland co-produces the missile system. In the late 1980s, Hughes Aircraft Company, prime contractor for the TOW weapon system, began producing the TOW 2A which gave the system the capability of defeating reactive armor. The TOW 2B provides additional capability against future armored threats.

In May 1972, U.S. soldiers used the TOW in combat during the Vietnam War. This was the very first time that American troops had ever fired an American-made missile under wartime conditions. The system has also seen action in various clashes between Israel and Syria as well as during the Iran/Iraq war. The TOW was one of the earliest missile systems to arrive in Southwest Asia and proved to be highly effective throughout Operation Desert Storm.

It's not all about guns and shooting. Here are some nifty individual equipment items used by our soldiers and Marines.

### **AN/PVS-14 Night Vision Device**



AN/PVS-14 Monocular Night Vision Device (MNVD) is a light-weight, third generation night vision device that gives the soldier the operational advantage to "see at night." NVDs (known also as Night Vision Goggles) are electro-optical devices that intensify (or amplify) existing light instead of relying on a light source of their own.

The devices are sensitive to a broad spectrum of light, from visible through infrared. An accessory illuminator can increase the light available at the infrared end of the spectrum by casting a beam of light that is not visible to the human eye. When a soldier looks "through" a NVD, an amplified electronic image is seen on a phosphor screen, giving the soldier the ability to operate with little or no illumination from the moon, stars, or other ambient light sources.

The PVS-14 system can be used with the head mount, as shown, or with a Kevlar helmet mount.

Field of View (degrees): 40 degrees  
Min Focus Range: 40 cm

Weight (unit): 420 grams  
Infrared light emitting diode  
Automatic brightness protection  
Variable gain control knob  
Low battery indicator  
Power Source: 2) AA batteries (Alkaline)  
Operating temperature: -51 C to + 49 C  
Storage temperature: -51 C to + 85 C  
Immersion: 1 meter for 30 minutes

### **SINGARS RT-1523E Radio**

The SINGARS RT-1523E Advanced System Improvement Program (ASIP) Radio is the primary Combat Net Radio for the US Army, designated primarily for voice command and control for infantry, armor, and artillery units.



The radio is a Single Channel Ground and Airborne Radio System which incorporates all the features of previous radio systems used with further enhancements to reduce its weight and size for the dismounted soldier and optimize its performance in the tactical internet. This is mainly due to the internal redesign of the radio and taking advantage of software based Digital Signal Processing (DSP) architecture.

The ASIP radio is one-half the size and one-third the weight of the full size radio. With battery, handset and antenna, the total man pack weight is less than 9 lbs. The system is used for all inter-platoon communications. SINGARS is capable of short-range or long-range operation for voice or digital communications. It can be used for single channel operation or in a jam-resistant, frequency-hopping mode that can be changed as needed.

30-88 MHz VHF-FM  
2320 Channels  
Single Channel and Frequency Hopping  
6 FH Presets (including TRANSEC keys)  
6 Single-channel Presets Plus Manual and Cue Channels  
Enhanced Data Mode (BPS) 1200, 2400, 4800, 9600  
Standard Data Mode (BPS) 600, 1200, 2400, 4800, 16,000  
Size: 3.4" high, 5.3" wide, and 10.15" deep  
33 Hr. Battery Life  
Embedded GPS Option  
Comprehensive Built-in Test Isolates Fault to Individual Module

### **Mollie Vest**



MOLLE is an Army and Marine Corps item that replaces the aging ALICE (All-purpose, Lightweight, Individual Carrying Equipment) pack and Integrated Individual Fighting System introduced in 1988. One of the main components of the MOLLE system is the

nylon mesh vest that has removable pockets to accommodate different carrying needs.

Some of the new technology centers on the MOLLE's frame. Instead of the tubular aluminum used with the ALICE, a new anatomically-contoured frame made with plastic originally used in automobile bumpers has dramatically increased durability, functioning in temperatures ranging from -40 to 120 degrees F. MOLLE also advances load-carrying ability with its new suspension system. Heavily-padded shoulder straps and waist belt are adjustable for varying torso lengths, eliminating the two sizes of ALICE. More weight is distributed at the shoulders and hips, and during a prolonged road march, soldiers can shift the weight to where it feels more comfortable. Additionally, the Fighting Load Carrier (FLC) replaces the Load Bearing Equipment (LBE) web belt and suspenders of the ALICE.

Soldiers and Marines can significantly increase the amount of ammunition they carry, and weight is evenly distributed across the torso. The vest has no metal clips or hooks that can be awkward and dig into the skin, and it has an H-harness in back to minimize heat buildup. It's adjustable to all sizes, and because the vest sits high, soldiers can fasten the MOLLE frame waist belt underneath the FLC to distribute some of the load to the hips. Three flap pockets on the FLC each hold two 30-round magazines, two grenade pockets and two canteen pouches.

### **Flak Vest**

Getting shot or hit by shrapnel can ruin your entire day in combat. In October of 2002, the Army and Marine Corps began issuing a new kevlar flak vest that is 35 percent lighter than the previous version. The 16.4-pound Interceptor system consists of a tactical vest and a pair of small arms protective inserts. The Kevlar vest includes detachable neck and groin guards, while the ceramic plates slide into pockets on the front and rear.



By itself, the Interceptor vest insulates a soldier from shrapnel and 9-mm pistol rounds. When the protective inserts are added, the system acts as a ballistic barrier to 7.62-mm rifle ammunition. The previous flak vest only offered protection against fragmentation.

The Interceptor's inter-changeable components give troops the ability to dress to the level of a particular threat. Applications include combat operations, peace-keeping missions and field-training exercises. Regardless of the situation, Interceptor Body Armor functions as an effective defense against mines, grenades, mortar shells, artillery fire and rifle projectiles.

The Interceptor system allows commanders increased capability in the area's of survivability and maneuverability. Survivability due to the ability to withstand up to 7.62 mm hits and maneuverability due to the 8.7-pound weight savings of the new system.

### **Land Warrior**

American soldiers and Marines are already among the most deadly in the world, but a system called Land Warrior will soon make them unmatched. While Land Warrior is officially still in the test & development stage, there is no doubt that some units are and will be "testing" the system in real combat environments.

Land Warrior integrates small arms with high-tech equipment enabling ground forces to deploy, fight and win on the battlefields of the 21st century. Land Warrior came about in 1991 when an Army study group recommended the service look at the soldier as a complete weapon system. The first priority in Land Warrior is lethality. The second is survivability and the third, command and control. The program will cost \$2 billion when 45,000 sets of the equipment are fielded between 2001-2014. The Marine Corps, Air Force and many foreign countries are interested in the system.



First and foremost, Land Warrior is a fighting system. Land Warrior has several subsystems: the weapon, integrated helmet assembly, protective clothing and individual equipment, computer/radio, and software. The weapon subsystem is built around the M-16/M-4 modular carbine. It has a laser range finder/digital compass, a daylight video camera, a laser aiming light and a thermal sight.

This system allows infantrymen to operate in all types of weather and at night. In conjunction with other components, a soldier can even shoot around corners without exposing himself to enemy fire. The integrated helmet assembly is lighter and more comfortable than today's helmet. It has a helmet-mounted monocular day display, a night sensor with flat panel display, a laser detection module, ballistic/laser eye protection, a

microphone and a headset.

The protective clothing and individual equipment subsystem incorporates modular body armor and upgrade plates that can stop small-arms rounds fired point-blank. It includes an integrated load-bearing frame, chemical/biological protective garments and modular rucksack.

The infantryman attaches the computer/radio subsystem to his load-bearing frame. Over this goes the rucksack for personal gear. The computer processor is fused with radios and a Global Positioning System locator. A hand grip wired to the pack and attached to the soldier's chest acts as a computer mouse and also allows the wearer to change screens, key on the radio, change frequencies and send digital information.

The subsystem comes in two flavors: The leader version has two radios and a flat panel display/keyboard, and soldiers have one radio. With the equipment, leaders and soldiers can exchange information. Soldiers using their weapon-mounted camera, for example, can send videos to their leaders.

Finally, the software subsystem includes tactical and mission support modules, maps and tactical overlays, and the ability to capture and display video images. The system also contains a power management module. Designers set up the system so it can be updated as technology improves.

One problem the Army must overcome before final fielding is power. Current batteries last about 150 minutes with all systems running. Clearly soldiers won't have all systems running all the time, but the Army does not consider this acceptable. Other batteries under development by the Army's Communications- Electronics Command may push the time up to 30 hours.



The first Land Warrior production version will be fielded in fiscal 2004. The Army expects to procure 34,000 sets of the system. That system will be more streamlined than the "test systems" in use today and will contain a multifunction laser. Soldiers will be able to point the laser at a target and the information will go directly to the network. This will allow the soldier to call for artillery fire, for example, without having to voice transmit coordinates.